

What is claimed is:

1. A method of determining whether a subject has an bone marrow
derived stem cell (BMDC) dependent metaplasia, comprising detecting the presence
5 of BMDC's or BMDC-derived cells in a test sample from the subject, wherein the
presence of BMDC's or BMDC-derived cells is indicative that the subject is afflicted
with an BMDC-dependent metaplasia.
2. A method of determining whether a subject has an BMDC-associated
10 cancer comprising detecting the presence of BMDC's or BMDC-derived cells in a test
sample from the subject, wherein the presence of BMDC's or BMDC-derived cells is
indicative that the subject is afflicted with and BMDC-associated cancer.
3. A method of determining whether a subject has a higher than normal
15 risk of developing an BMDC-dependent metaplasia, comprising detecting the
presence of BMDC's or BMDC-derived cells in a test sample from the subject,
wherein the presence of BMDC's or BMDC-derived cells is indicative that the subject
is at higher than normal risk of developing an BMDC-dependent metaplasia.
- 20 4. A method of determining whether a subject has a higher than normal
risk of developing an BMDC-associated cancer, comprising detecting the presence of
BMDC's or BMDC-derived cells in a test sample from the subject, wherein the
presence of BMDC's or BMDC-derived cells is indicative that the subject is at higher
than normal risk of developing an BMDC-associated cancer.
- 25 5. A method for assessing the efficacy of a treatment for cancer in a
patient, comprising comparing the level of BMDC cells or BMDC-derived cells in a
first sample obtained from the patient prior to treatment, and the level of BMDC or
BMDC-derived cells in a second sample from the patient following treatment,
30 wherein a significantly lower level of BMDC cells or BMDC-derived cells in the
second sample relative to that in the first sample is an indication that the therapy is
efficacious for inhibiting or eradicating the cancer in the patient.
6. A method for monitoring or assessing the progression of a BMDC-
35 associated cancer in a patient, comprising the steps of
 - a) detecting in a patient test sample at a first time point, the level of
BMDC's or BMDC-derived cells;

- b) detecting the level of BMDC's or BMDC-derived cells in a test sample at a subsequent point in time; and
- c) comparing the level of BMDC's or BMDC-derived cells at each time point thereby monitoring the progression of the cancer in the patient.

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7. A method for determining whether a cancer has metastasized or is likely to metastasize, the method comprising, comparing the level of BMDC's or BMDC-derived cells in a patient test sample and the normal level of BMDC's or BMDC-derived cells in a control sample, wherein a significantly higher level of BMDC's or BMDC-derived cells in the patient test sample as compared to the normal level is an indication that the cancer has metastasized or is likely to metastasize.

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8. A method for selecting for a composition for treating BMDC-dependent metaplasia or BMDC-associated cancer in a patient comprising the steps of:

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- a) providing BMDC's or BMDC-derived cells;
- b) separately maintaining aliquots of the cells in the presence or absence of a test composition;
- c) comparing the proliferation of the cells in each of the aliquots; and
- d) determining whether the test composition significantly reduces the proliferation of the cells in the aliquot containing the test composition relative to the level of cell proliferation in the absence of the test composition.

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9. A method for selecting for a composition for treating BMDC-dependent metaplasia or BMDC-associated cancer in a patient comprising the steps of:

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- a) providing BMDC's or BMDC-derived cells;
- b) separately maintaining aliquots of the cells in the presence or absence of a test composition;
- c) comparing the differentiation of the cells in each of the aliquots; and
- d) selecting a test composition that significantly increases the differentiation of the cells in the aliquot containing the test composition relative to the level of cell differentiation in the absence of the test composition

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10. A method of treating a subject for a state associated with abnormal BMDC growth, comprising administering a BMDC modulator to the subject such that the state associated with abnormal BMDC growth is treated.

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11. The method of claim 10, wherein the state is BMDC-dependent metaplasia.

12. The method of claim 10, wherein the state is BMDC-associated cancer.

13. The method of claims 1, wherein the test sample is from epithelial tissue.

14. The method of claims 13, wherein the test sample is from the breast, uterus, ovarian, brain, endometrium, cervical, colon, esophagus, hepatic, kidney, mouth, prostate, liver, lung, skin or testicular epithelial tissues.

15. The method of claims 1 wherein the test sample is a body fluid sample.

16. The method of claims 1, wherein the level of BMDC or BMDC-derived cells is assessed by detecting the presence of a BMDC polypeptide in the test sample.

17. The method of claim 16, comprising contacting the sample with an antibody having specificity for an BMDC polypeptide under conditions suitable for binding of the antibody to the BMDC polypeptide thereby resulting in the formation of a complex between the antibody and the BMDC polypeptide; and comparing the amount of the complex in the test sample with an amount of a complex in a control sample, wherein an elevation in the amount of the complex between the antibody and BMDC polypeptide in the test sample compared to the complex in the control sample is indicative of the presence BMDC or BMDC-derived cells in the sample.

18. The method of claim 17, wherein the antibody is a polyclonal antibody.

19. The method of claim 17, wherein the antibody is a monoclonal antibody.

20. The method of claim 17, wherein the antibody is detectably labeled

21. The method of claim 17, wherein antibodies to one or more BMDC polypeptides are used.

22. The method of claim 17, wherein the BMDC polypeptide is selected from the group consisting of Flk-1, Sca-1, Thy-1, KRT1-19, TFF2, Patched, and CXL4.

5 23. The method of claims 1, wherein the level of BMDC or BMDC-derived cells in a sample is assessed by detecting the presence of a BMDC nucleic acid in a test sample.

10 24. The method of claim 23, comprising contacting a test sample from the mammal with a nucleic acid probe to an BMDC nucleic acid; maintaining the test sample and the nucleic acid probe under conditions suitable for a hybridization; detecting the hybridization between the test sample and the nucleic acid probe; and comparing the hybridization in the test sample from the mammal to a control test sample, wherein an elevation in the hybridization signal in the test sample from the
15 mammal compared to the control sample is indicative of abnormal cell growth.

25. The method of claim 24, wherein the nucleic acid probe is labeled with a label comprising a fluorescent, radioactive, and enzymatic label.

20 26. The method of claim 24, comprising contacting the sample with two or more BMDC nucleic acid probes.

27. A kit for carrying out the method of claims 1.

25 28. The method of claims 3, wherein the BMDC-associated cancer is organ cancer.

29. The method of claims 1, wherein the BMDC-dependent metaplasia or BMDC-associated cancer is associated by chronic inflammation.
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30. The method of claim 29, wherein the chronic inflammation is caused by bacterial, viral or parasitic infection.

31. The method of claim 29, wherein the chronic inflammation is caused
35 by exposure to a carcinogen.

32. The method of claim 29, wherein the cancer is selected from the group consisting of gastric adenocarcinoma, esophageal adenocarcinoma, hepatocellular carcinoma, colon cancer and lung cancer.

5 33. The method of claim 29, wherein the cancer is selected from the group consisting of breast cancer, pancreatic cancer or melanoma.

34. A method of treating a chronic inflammatory condition comprising administering to a patient having a chronic inflammatory condition BMDC's
10 expressing at least one protein whose activity results in the treatment of the chronic inflammatory condition.

35. The method of claim 34, comprising the steps of
(a) obtaining BMDC's from the patient;
15 (b) transfecting, infecting or transducing the BMDC's with a wild-type copy of a nucleic acid whose expression is defective in the BMDC's from the patient; and
(c) administering the transfected, infected or transduced BMDC's
expressing the wild-type nucleic acid to the patient in an amount sufficient to treat the
20 chronic inflammatory condition.

36. The method of claims 1, wherein said BMDC or BMDC-derived cells is a Mesenchymal stem cell or Mesenchymal-derived cell.